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APPLICATION NO	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO	CONFIRMATION NO
09 436,158	11/09/1999	ERASMO PEREZ	M-7744US	6214

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EXAMINER

HA, NATHAN W

ART UNIT PAPER NUMBER

2814

DATE MAILED: 12/14/2001

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/436,158

Applicant(s)

PEREZ ET AL.

Examiner

Nathan Ha

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 22 August 2001.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 13-28 and 30-45 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 13-28 and 30-45 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in the Mailing of _____.

- 14) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f) if a translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

2. Claims 13-14, 17-18, 20-33, and 34-45 are rejected under 35 U.S.C. 102(a) as being anticipated by Okumura et al. (US. 6,130,115)

In regard to claims 13, 21, 22, 23, figs. 1-4, Okumura et al. discloses a semiconductor package comprising a metal lead frame, fig. 1b for example, including a plurality of leads 13 and 16 arrayed around a central region thereof; each lead having an outer end extending away from the central region and an inner end extending toward the central region;

a locking pad 16 in an outer portion of each lead adjacent to outer end,
see details in fig. 7b;

a wire bonding pad, also portion of member 16, in an inner portion of each lead adjacent to its inner end, see also fig. 7b; and,

a die pad 11 attached to the lead frame in the central region thereof and

and a recessed shoulder extending around the central portion

In regard to claim 14, the die pad is attached to the frame or to at least one of the leads by at least one tie-bar 10, see fig. 7c, see also, col. 6, second paragraph.

In regard to claim 17, the lands 16 are rectangular, see fig. 7b.

In regard to claims 18, 24, in fig 7, Okumura further discloses a semiconductor die 12 attached to the upper surface of the die pad 11;

a plurality of conductive wires 14 bonded at opposite ends to pad on a top surface of the die and selected ones of the bonding pads on the leads; and,

a body insulative plastic molded over the die 12, die pad 11, and the leads 13 such that the plastic body surrounds the locking pads, the bonding pads, and the recessed shoulder on the lower surface of the die pad and interlocks with them, see fig. 7b, also, col. 16 second paragraph.

In regards to claim 20, see col. 16, second paragraph.

In regards to claim 25, see fig. 7b.

In regards to claims 26 and 33, Okumura et al. further discloses a recessed shoulder at the lower surface of the die pad 11 such that a central portion of the lower surface inside the shoulder is exposed through a lower surface of the plastic body. see figs. 7a and 7b.

In regards to claim 27, see figs. 7.

In regards to claims 28 and 32. Okumura et al. further teaches a way for resisting

In regard to claim 35, Okumura discloses the insulative plastic body underfills the pads, see col. 6, lines 7-10.

In regard to claims 38-41, 43 see Okumura's figs. 9.

In regard to claims 42, 45, see fig. 9.

Regarding the processing limitation recited in (claims 34, 36, and 44, metal-displacement process, etc.), this would not carry patentable weight in this claim drawn to structure. In re Thorpe, 227 USPQ 964 (Fed. Cir. 1985).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 15-16 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okumura et al. as applied to claim 13 above, and further in view of Yagi et al. (US. 6,025,640)

In regard to claim 19, Okumura et al. discloses all of the claimed limitation as mentioned above except the leadframe having an alloy of copper, or iron alloy containing nickel. Yagi et al., however, teaches the leadframe 31 having an alloy of

Therefore, it would have obvious to one of ordinary skill in the art at the time of the invention was made to use such materials as shown above by Yagi et al. in Okumura et al. since these metals have higher conductivity

In regard to claims 15-16, the width and the pitch of the leads and the pad as claimed are not patentable features since one of ordinary skill in the art would modify these measurements in the device to meet the design criteria.

Response to Arguments

5. Applicant's arguments filed 8/22/01 have been fully considered but they are not persuasive.

In regard to Applicants's arguments, page 7-8, stated, "there is no teaching or suggestion anywhere in the '115 of:

- 1) "a recessed shoulder extending around the central portion"
- 2) "means formed into a lower surface of [a] die pad for resisting penetration of moisture into the package along the die pad; and
- 3) "the central portion of the lower surface of [a] die pad [being] exposed through a lower surface."

As mentioned above regarding to rejection of claims 13, 22, and 26, in figs. 1-4, Okumura discloses a recess shoulder 16, for example, extending around the central

Okumura further teaches a way of enhancing adhesion between the bottom portion of the chip to prevent the cracking that causes moisture in the device, see col. 8, last paragraph

Okumura, in fig. 7, further discloses the recess shoulder formed into a periphery of a lower surface of the die pad so the central portion of the lower surface inside of the shoulder is exposed through the surface of the plastic body.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


Any inquiry concerning this communication or earlier communications from the

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on (703) 306-2794. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and 308-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Nathan Ha
December 12, 2001


OLIK CHAUDHURI
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